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October 1967
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METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV (SR 059)
(21 September 1967)

BY

STANLEY KUBINSKI

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ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV (SR 059)
(21 September 1967)

By

Stanley Kubinski

DR-255

October 1967

DA Task IV650212A127-02

ATMOSPHERIC SCIENCES LABORATORY
WHITE SANDS MISSILE RANGE, NEW MEXICO

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ABSTRACT

Meteorological data gathered for the launching of Nike-Hydac STV (SR 059) are presented for the Ballistics Systems Division, U. S. Air Force, and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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INTRODUCTION

Nike-Hydac STV (SR 059) was launched from Launch Complex 33, L-314, White Sands Missile Range (WSMR), New Mexico, at 1000 hours MDT, 21 September 1967.

Meteorological data used in conjunction with theoretical calculations to predict rocket impact were collected by the Meteorological Support Division, Atmospheric Sciences Laboratory (ASL), WSMR, New Mexico. The Ballistics Meteorologist for this firing was Stanley F. Kubinski.

DISCUSSION

Wind data for the first 216 feet above the surface were obtained from a system composed of 5 Aerovanes mounted on a 200-foot tower and cabled to wind component indicators.

From 216 to 4,000 feet above the surface, wind data were obtained from T-9 radar observed balloon ascents.

Temperature, pressure, and humidity data, along with upper wind data from 4,000 to 74,168 feet above the surface, were obtained from standard rawinsonde observations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Theoretical rocket performance values and ballistic factors as a function of altitude were provided by ASL, and are the basis for data appearing in Table XII.

PAYOUT		215.0	Pounds
CORIOLIS DISPLACEMENT	WEST.	5.0	Miles
SECOND-STAGE IGNITION	TIME	20.0	Seconds
	ALTITUDE	36,690.0	Feet MSL
PEAK	TIME	232.0	Seconds
	ALTITUDE	720,000.0	Feet MSL
UNIT WIND EFFECT	RANGE	2.27	Miles/MPH
	CROSS	2.36	Miles/MPH
TOWER TILT EFFECT		14.3	Miles/Degree

TABLE I. THEORETICAL ROCKET PERFORMANCE VALUES
NIKE-HYDAC STV (SR 059)

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
11- 60	.1440
60- 108	.0966
108- 148	.0629
148- 184	.0502
184- 216	.0286
216- 300	.0724
300- 400	.0533
400- 600	.0752
600- 800	.0557
800-1000	.0400

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
1000- 1400	.0555
1400- 2000	.0575
2000- 2500	.0288
2500- 3000	.0195
3000- 3500	.0112
3500- 4000	.0073
4000- 4250	.0012
4250- 9000	-.0135
9000-15000	-.0147
15000-21000	-.0166

LAYERS IN FEET ABOVE GROUND	BALLISTIC FACTORS
21000-26000	-.0102
26000-32691	-.0110
32691-34000	.0430
34000-36000	.0411
36000-41000	.0545
41000-46000	.0259
46000-51000	.0154
51000-56000	.0092
56000-61000	.0060
61000-66000	.0040
66000-74168	.0020

TABLE II. BALLISTIC FACTORS
NIKE-HYDAC STV (SR 059)

AERO-VANE NO.*	MEAN WIND COMPONENTS IN MILES PER HOUR							
	0800 MDT		0830 MDT		0900 MDT		0915 MDT	
N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S
1	2.0S	1.5W	2.0S	1.5W	4.5S	0.5E	5.5S	0.0
2	4.0	2.0	3.5	2.0	4.0	0.5	6.0	0.5W
3	5.0	0.0	4.0	2.0	4.0	0.5	5.0	0.0
4	6.5	1.5E	6.0	1.5	4.0	0.0	6.0	0.0
5	6.0	2.0	7.0	0.0	4.0	0.0	4.5	3.5E

AERO-VANE NO.*	MEAN WIND COMPONENTS IN MILES PER HOUR							
	0940 MDT		0950 MDT		1000 MDT		1015 MDT	
N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S
1	2.5S	0.5W	5.0S	0.5E	3.5S	1.5E		
2	3.0	0.0	4.0	0.0	1.0	2.0		
3	4.0	1.5W	4.0	0.5W	3.0	1.0		
4	5.0	0.5	4.5	1.0E	3.5	0.5		
5	3.5	1.5E	4.5	4.5	1.5	3.5		

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TABLE III. ANEMOMETER WIND SPEED AND DIRECTION
NIKE-HYDAC STV (SR 059)

* Heights corresponding to Aerovane Numbers: 1 = 35 Feet 3 = 128 Feet
2 = 88 Feet 4 = 168 Feet 5 = 200 Feet

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR							
	1 0800 MDT		2 0830 MDT		3 0900 MDT		4 0915 MDT	
	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	6.0S	4.0E	6.5S	0.0	4.0S	0.0	4.0S	0.5E
300- 400	5.5	6.0	5.5	0.0	4.0	0.0	3.0	0.5W
400- 600	6.5	7.0	5.0	0.0	5.5	1.0W	3.0	1.0
600- 800	8.0	8.0	6.5	2.5E	4.0	0.5	4.0	0.0
800-1000	8.5	10.0	7.5	3.5	2.0	1.0E	2.5	1.0E
1000-1100	7.0	11.5	5.0	2.0	1.5N	2.0	2.0N	0.5
1400-2000	2.0	9.0	1.5	4.0	4.5	2.0	4.5	0.5
2000-2500	1.5N	4.0	1.5N	2.5	8.5	1.0	7.0	2.0
2500-3000	1.0	4.5	6.0	0.5W	9.0	1.5	10.0	1.5
3000-3500	0.5S	8.0	7.0	0.5	10.5	2.0	10.5	0.0
3500-4000	1.5	12.0	3.0	0.0	4.5	0.5	8.0	3.0E

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA
(T-9 RADAR TRACKER METHOD)
NIKE-HYDACK STV (SR 059)

ALTITUDE IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN MILES PER HOUR								
	6 0900 MDT	7 0930 MDT	0 1001 MDT						
N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W	N-S	E-W
216- 300	3.33	3.00	4.50	2.50	1.00	0.50	0.50		
300- 400	4.5	3.0	6.3	0.5	2.0	2.5W			
400- 600	5.0	1.5	6.5	0.5	4.5	1.5			
600- 800	3.5	0.0	6.0	1.5	6.5	0.0			
800-1000	2.5	1.00	6.5	1.0	6.5	0.5W			
1000-1100	0.50	3.0	6.0	1.0W	4.0	1.0W			
1100-2000	3.0	2.5	4.0N	2.0	1.5N	2.0W			
2000-2500	9.0	1.0N	8.0	0.5	8.0	0.5			
2500-3000	11.0	1.0	11.0	0.5	11.0	0.5			
3000-3500	10.5	0.0	9.5	3.5W	10.0	2.5W			
3500-4000	8.0	4.5W	5.5	3.5	7.0	3.5E			

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA (CONT)
 (TR-9 RADAR TRACKER METHOD)
 NIKKE-HYDAC STW (TR 059)

LAYERS IN FEET ABOVE GROUND	MEAN WIND COMPONENTS IN KNOTS					
	0700 MDT		1030 MDT		2	
	N-S	E-W	N-S	E-W	N-S	E-W
40000- 4250	2.5N	19.0E	5.0N	6.0E		
4250- 9000	0.0	14.0	6.0	10.5		
9000-15000	6.0N	2.0	7.3	9.0		
15000-21000	10.5	6.0W	0.5	3.0W		
21000-26000	9.5	16.5	7.0	12.0		
26000-32691	0.0	29.0	4.0	23.5		
32691-34000	0.0	45.0	4.5	26.5		
34000-36000	4.5E	26.5	4.5	26.5		
36000-41000	10.0	28.0	0.0	27.0		
41000-46000	5.5	30.5	0.0	26.0		
46000-51000	0.0	22.0	11.5N	9.5		
51000-56000	10.5S	4.0E	5.0S	0.5E		
56000-61000	3.5N	18.5	2.5	13.0		
61000-66000	2.5	13.0	0.0	12.0		
66000-74168	5.0	13.0	3.0S	16.0		

TABLE V. WANTINGONDE-MEASURED WIND DATA
NIKE-HYDAC UTV (SR 059)

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT 67 1030 HRS MDT
ASCENSION NO. 766

SIGNIFICANT LEVEL DATA
7360003901
WHITE SANDS SITE
TABLE VI

WEST SITE COORDINATES
E 480,580 FEET
N 185,045 FEET

PRESSURE GEOMETRIC

ALTITUDE
MILLIBARS MSL FEET

TEMPERATURE

AIR DEWPOINT
DEGREES CENTIGRADE

REL. HUM.
PERCENT

885.0	3909.0	23.6	15.0	50.0
875.0	4314.5	22.1	10.0	46.0
829.0	5845.4	18.1	8.4	53.0
730.0	9394.1	13.6	-2.4	33.0
632.0	13310.6	3.6	-9.4	38.0
582.0	15504.4	2.5	-21.6	15.0
489.0	20050.9	-6.6	-31.4	12.0
474.0	20851.3	-16.4	-39.1	10.0
405.0	24629.9	-14.9	-38.9	11.0
320.0	30525.9	-29.6	-45.5	20.0
294.0	32507.3	-31.7	-50.4	14.0
164.0	45267.9	-61.2	0*	0*
126.0	50517.8	-72.5	0*	0*
121.0	51303.8	-71.9	0*	0*
107.0	53672.3	-75.6	0*	0*
100.0	54574.9	-72.2	0*	0*
86.0	57924.1	-69.4	0*	0*
78.0	59873.5	-63.6	0*	0*
68.0	62693.9	-66.3	0*	0*
47.0	70192.1	-56.0	0*	0*
35.0	76301.6	-55.6	0*	0*
24.0	84473.9	-47.7	0*	0*
12.0	99788.9	-42.6	0*	0*
9.0	106317.8	-36.0	0*	0*

** RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 1030 HRS MDT
ASCENSION NO. 766

UPPER AIR DATA
016000Z901
WHITE SANDS SITE
TABLE VII

WEYM SINE COORDINATES
E 480.500 FEET
N 105.045 FEET

GEOMETRIC ALTITUDE MSL, FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWEPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SOUND SPEED IN KNOTS	WIND DATA		INDEX OF REFRACTION
						DIRECTION DEGREES (TN)	SPEED IN KNOTS	
3989.0	885.0	23.6	15.0	50.0	673.5	100.0	1.0000003	
4000.0	884.7	23.5	14.8	57.6	673.1	100.0	1.0000002	
4500.0	869.3	21.6	9.8	464.8	220.8	100.0	1.0000001	
5000.0	854.1	20.3	9.4	490.1	260.9	100.0	1.0000276	
5500.0	839.2	19.0	8.8	514.4	300.9	99.4	1.0000272	
6000.0	824.4	17.9	8.0	521.1	341.0	99.5	1.0000267	
6500.0	809.0	17.3	6.4	496.5	445.4	99.6	1.0000258	
7000.0	795.4	16.6	5.8	466.5	476.0	99.6	1.0000252	
7500.0	781.3	16.0	3.7	437.7	525.5	99.7	1.0000245	
8000.0	767.4	15.4	2.2	409.9	575.1	99.7	1.0000238	
8500.0	753.8	14.7	0.6	30.0	601.7	110.0	1.0000232	
9000.0	740.4	14.1	-1.0	35.2	604.2	112.0	1.0000226	
9500.0	727.2	13.3	-2.5	33.1	659.6	114.2	1.0000221	
10000.0	713.9	12.1	-3.4	33.0	658.4	115.0	1.0000216	
10500.0	700.9	10.9	-4.3	34.4	660.9	115.4	1.0000212	
11000.0	688.1	9.5	-5.2	35.1	660.9	115.6	1.0000208	
11500.0	675.6	8.2	-6.1	35.7	658.4	115.7	1.0000205	
12000.0	663.2	6.9	-7.0	36.3	652.3	115.7	1.0000201	
12500.0	651.1	5.7	-7.9	37.0	650.0	116.7	1.0000197	
13000.0	639.3	4.4	-8.8	37.6	649.5	116.9	1.0000194	
13500.0	627.8	3.5	-10.2	36.0	647.0	117.0	1.0000190	
14000.0	615.6	3.0	-12.4	35.6	647.2	117.5	1.0000184	
14500.0	604.4	2.0	-14.9	25.5	647.5	104.1	1.0000179	
15000.0	593.1	2.0	-17.0	20.5	647.1	140.0	1.0000174	
15500.0	582.1	2.5	-21.6	15.0	646.7	74.0	1.0000169	
16000.0	571.1	1.5	-22.6	14.7	645.5	74.0	1.0000166	
16500.0	560.2	0.5	-23.7	14.5	644.3	70.1	1.0000163	
17000.0	549.6	-0.5	-24.0	14.0	643.7	69.1	1.0000161	
17500.0	539.2	-1.5	-25.9	13.7	641.9	69.0	1.0000159	
18000.0	529.0	-2.5	-26.9	13.4	640.6	70.7	1.0000153	

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 1.030 MPS MDI
ASCENSION NO. 766

UPPER AIR DATA
1360003901
WHIT SANDS SITE
TAN. & VIT (CONT)

HSTM SITE COORDINATES
E 480, 580 FEET
N 105, 045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEPARTURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUICR METER METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (TN)	WIND DATA SPEED KNOIS	INDEX OF REFRACTION
18500.0	518.9	-3.5	-28.0	13.0	670.2	639.5	90.0	7.6
19000.0	509.1	-4.5	-29.1	12.7	660.0	638.3	41.6	7.1
19500.0	499.4	-5.5	-20.2	12.4	649.9	637.1	22.9	7.1
20000.0	490.0	-6.5	-31.3	12.0	649.0	635.9	1.7	7.5
20500.0	480.5	-6.5	-32.3	10.9	627.6	635.9	346.1	6.8
21000.0	471.2	-6.7	-33.3	10.0	616.0	635.7	314.4	9.9
21500.0	462.0	-7.8	-34.3	10.2	606.4	634.4	328.6	10.2
22000.0	453.0	-8.9	-34.8	10.3	597.0	633.1	316.4	9.6
22500.0	444.1	-9.9	-35.5	10.4	587.7	631.8	325.6	9.0
23000.0	435.4	-11.0	-36.2	10.3	578.5	630.5	325.9	7.9
23500.0	426.9	-12.1	-36.9	10.7	569.5	629.2	327.5	7.2
24000.0	418.5	-13.1	-37.7	10.9	560.7	627.9	330.0	6.6
24500.0	410.3	-14.2	-38.4	10.7	552.0	626.7	325.7	7.3
25000.0	402.2	-15.3	-39.0	11.3	543.4	625.3	321.5	8.1
25500.0	393.9	-16.5	-39.6	12.1	534.9	623.7	316.6	7.6
26000.0	385.9	-17.9	-39.9	12.8	526.7	622.1	314.2	7.3
26500.0	378.0	-19.2	-40.3	13.6	518.5	620.5	305.8	12.3
27000.0	370.2	-20.5	-40.9	14.4	510.5	619.0	290.2	13.3
27500.0	362.7	-21.9	-41.4	13.2	502.6	617.4	291.7	14.0
28000.0	355.2	-23.1	-42.0	16.0	494.9	615.8	285.0	15.3
28500.0	348.0	-24.4	-42.2	16.8	487.3	614.2	278.3	16.9
29000.0	340.8	-25.7	-43.3	17.6	479.8	612.6	273.7	18.3
29500.0	333.9	-27.3	-44.0	18.4	472.4	611.0	270.0	19.4
30000.0	327.0	-28.2	-44.7	19.2	465.2	609.4	268.6	20.5
30500.0	320.3	-29.5	-45.9	20.0	458.1	607.0	268.2	21.5
31000.0	313.6	-30.1	-46.6	18.6	449.5	607.1	270.7	21.6
31500.0	306.9	-30.6	-47.8	17.1	440.9	606.4	274.1	21.4
32000.0	300.4	-31.2	-49.1	15.5	432.5	605.7	278.7	21.7
32500.0	294.1	-31.7	-50.4	14.0	424.3	605.1	283.6	22.1
33000.0	287.4	-32.8	-51.7	13.5**	416.7	603.6	286.5	22.6

* * AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 1030 HRS MST
ASCENSION NO. 766

UPPER AIR DATA
0360003901
WHI RE SANDS SITE
TABLE VII (Cont.)

WSTA SITE COORDINATES
E 488.580 FEET
N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	AIR DEWPONT DEGREES CENTIGRADE	TEMPERATURE DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES (TN)	WIND DATA SPEED KNOTS	INDEX OF REFRACTION
33500.0	280.9	-34.0	-53.0	12.9**	409.3	602.2	293.3	23.5	1.000091
34000.0	274.5	-35.2	-54.3	12.4**	402.0	600.7	292.3	24.1	1.000090
34500.0	268.4	-36.3	-55.7	11.8**	394.8	599.3	291.1	24.7	1.000088
35000.0	262.3	-37.5	-57.0	11.3**	387.8	597.8	288.9	24.9	1.000087
35500.0	256.4	-38.6	-58.3	10.7**	380.9	596.3	286.7	25.2	1.000085
36000.0	250.6	-39.8	-59.7	10.2**	374.1	594.8	283.1	26.0	1.000083
36500.0	244.9	-40.9	-61.0	9.6**	367.5	593.4	279.6	26.8	1.000082
37000.0	239.4	-42.1	-62.4	9.1**	361.0	591.9	276.8	26.4	1.000080
37500.0	234.0	-43.2	-63.8	8.5**	354.6	590.4	273.9	25.9	1.000079
38000.0	228.7	-44.4	-65.2	8.0**	348.3	588.9	272.6	26.1	1.000078
38500.0	223.5	-45.6	-66.7	7.4**	342.2	587.4	271.6	26.4	1.000076
39000.0	218.5	-46.7	-68.1	6.9**	336.1	585.9	269.9	26.0	1.000075
39500.0	213.5	-47.9	-69.6	6.3**	330.2	584.4	267.8	25.1	1.000074
40000.0	208.7	-49.0	-71.2	5.8**	324.4	582.9	266.6	24.9	1.000072
40500.0	204.0	-50.2	-72.7	5.2**	318.7	581.4	267.8	26.5	1.000071
41000.0	199.4	-51.3	-74.4	4.7**	313.1	579.9	269.0	26.1	1.000070
41500.0	194.8	-52.5	-76.1	4.1**	307.7	578.4	266.7	27.0	1.000069
42000.0	190.4	-53.6	-77.8	3.5**	302.3	576.9	264.3	25.8	1.000067
42500.0	186.1	-54.8	-79.7	3.0**	297.0	575.4	264.3	25.4	1.000066
43000.0	181.9	-56.0	-81.8	2.5**	291.8	573.8	266.2	25.7	1.000065
43500.0	177.8	-57.1	-84.1	1.9**	286.8	572.3	267.8	25.9	1.000064
44000.0	173.8	-58.3	-86.8	1.4**	281.8	570.8	266.5	24.9	1.000063
44500.0	169.9	-59.4	-90.3	0.8**	276.9	569.2	265.2	23.9	1.000062
45000.0	166.0	-60.6	-96.5	0.3**	272.1	567.7	266.4	24.9	1.000061
45500.0	162.1	-61.7	0.	0.**	267.1	566.2	269.3	27.2	1.000059
46000.0	158.1	-62.8	0.	0.**	261.8	564.8	271.3	26.2	1.000058
46500.0	154.2	-63.9	0.	0.**	256.6	563.3	271.4	26.2	1.000057
47000.0	150.3	-64.9	0.	0.**	251.6	561.9	271.8	24.5	1.000056
47500.0	146.6	-66.0	0.	0.**	246.6	560.4	276.0	25.5	1.000055
48000.0	143.0	-67.1	0.	0.**	241.7	559.0	280.1	26.5	1.000054

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 1430H-1435H
ASCENSION NO. 746

UPPER AIR DATA
1360003901
WHITI SANDS SITE
TABLE VII. (Cont.)

GEOMETRIC ALTITUDE MSL, FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT	DENSITY GR/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES (TN)	INDEX OF REFRACTION
48500.0	139.4	-68.2	0.	237.0	557.5	1282.8	1.000053
49000.0	136.0	-69.2	-0.	232.3	556.0	21.2	1.000052
49500.0	132.6	-70.3	-0.	227.8	554.6	287.5	1.000051
50000.0	129.3	-71.4	-0.	223.3	553.1	20.3	1.000050
50500.0	126.1	-72.5	-0.	218.9	551.6	289.2	1.000049
51000.0	122.9	-72.4	-0.	213.0	552.1	290.6	1.000049
51500.0	119.8	-72.2	-0.	207.7	552.0	291.0	1.000047
52000.0	116.7	-73.0	-0.	203.1	550.9	291.4	1.000046
52500.0	113.7	-73.8	-0.	198.7	549.8	291.6	1.000045
53000.0	110.8	-74.5	-0.	194.4	548.7	291.7	1.000044
53500.0	108.0	-75.3	-0.	190.1	547.7	288.3	1.000043
54000.0	105.2	-74.7	-0.	184.7	549.5	285.6	1.000042
54500.0	102.5	-73.4	-0.	178.8	550.3	237.1	1.000041
55000.0	99.9	-72.2	-0.	173.1	552.0	172.7	1.000040
55500.0	97.4	-71.7	-0.	168.4	552.7	122.2	1.000039
56000.0	94.9	-71.2	-0.	163.7	553.3	119.4	1.000037
56500.0	92.5	-70.8	-0.	159.2	554.0	116.6	1.000036
57000.0	90.2	-70.3	-0.	154.8	554.6	115.9	1.000035
57500.0	87.9	-69.8	-0.	150.6	555.3	115.9	1.000034
58000.0	85.7	-69.2	-0.	146.3	556.1	115.4	1.000033
58500.0	83.6	-67.7	-0.	141.7	558.1	113.4	1.000032
59000.0	81.5	-66.3	-0.	137.3	560.0	111.5	1.000031
59500.0	79.5	-64.9	-0.	132.9	561.9	108.8	1.000030
60000.0	77.5	-63.9	-0.	129.1	563.2	105.9	1.000029
60500.0	75.6	-64.4	-0.	126.2	562.6	103.0	1.000028
61000.0	73.8	-64.8	-0.	123.3	562.0	99.8	1.000027
61500.0	71.9	-65.3	-0.	120.6	561.4	96.6	1.000027
62000.0	70.2	-65.7	-0.	117.9	560.8	97.4	1.000026
62500.0	68.5	-66.2	-0.	115.2	560.2	98.5	1.000026
63000.0	66.8	-65.8	-0.	112.3	560.6	99.1	1.000025

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 1030 HRS MET
ASCENSION NO. 766

UPPER AIR DATA
0360003901
WHITE SANDS SITE
TABLE VII (Cont.)

GEOMETRIC ALTITUDE VS L. FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPONT DEGREES	REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(1N)	INDEX OF REFRACTION
63500.0	65.2	-65.2	-0.	109.2	561.5	98.9	1.000024
64000.1	64.6	-64.6	-0.	106.3	562.3	98.7	1.000024
64500.0	62.1	-64.0	-0.	103.4	563.2	96.1	1.000023
65000.0	60.6	-63.3	-0.	100.6	564.0	93.4	1.000022
65500.0	59.1	-62.7	-0.	97.9	564.9	90.3	1.000022
66000.0	57.7	-62.5	-0.	95.2	565.7	86.8	1.000021
66500.0	56.3	-61.4	-0.	92.6	566.6	83.6	1.000021
67000.0	54.9	-60.8	-0.	90.1	567.4	85.1	1.000020
67500.0	53.6	-60.2	-0.	87.7	568.2	86.6	1.000020
68000.0	52.3	-59.6	-0.	85.3	569.1	87.6	1.000019
68500.0	51.1	-58.9	-0.	83.0	569.9	88.2	1.000018
69000.0	49.8	-58.3	-0.	80.8	570.7	88.7	1.000018
69500.0	48.6	-57.7	-0.	78.6	571.6	87.3	1.000017
70000.0	47.4	-57.0	-0.	76.5	572.4	85.8	1.000017
70500.0	46.3	-56.7	-0.	74.6	572.8	84.3	1.000017
71000.0	45.2	-56.6	-0.	72.8	572.9	82.8	1.000016
71500.0	44.2	-56.5	-0.	71.0	573.1	81.4	1.000016
72000.0	43.1	-56.4	-0.	69.3	573.2	80.1	1.000015
72500.0	42.1	-56.4	-0.	67.7	573.3	90.0	1.000015
73000.0	41.1	-56.3	-0.	66.0	573.5	94.3	1.000015
73500.0	40.1	-56.2	-0.	64.5	573.6	96.2	1.000014
74000.0	39.2	-56.1	-0.	62.9	573.7	98.0	1.000014
74500.0	38.3	-56.0	-0.	61.4	573.8	99.1	1.000014
75000.0	37.4	-55.9	-0.	59.9	574.0	99.4	1.000013
75500.0	36.5	-55.8	-0.	58.5	574.1	99.7	1.000013
76000.0	35.6	-55.7	-0.	57.1	574.2	95.9	1.000013
76500.0	34.8	-55.5	-0.	55.7	574.5	91.2	1.000012
77000.0	34.0	-55.0	-0.	54.3	575.1	86.5	1.000012
77500.0	33.2	-54.5	-0.	52.9	575.8	80.5	1.000012
78000.0	32.5	-54.0	-0.	51.6	576.4	74.4	1.000011

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION. !

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 1030 HRS MDT
ASCENSION NO. 766

UPPER AIR DATA
1360003901
WHITE SANDS SITE
TABLE VII (Cont.)

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES(UTN)	SPEED KNOTS	WIND DATA		INDEX OF REFRACTION
								DIRECTION DEGREES(UTN)	SPEED KNOTS	
78500.0	31.7	-53.5	0.	-0.	50.3	577.0	68.9	8.8	1.000011	
79000.0	31.9	-53.0	0.	-0.	49.0	577.7	66.8	8.9	1.000011	
79500.0	30.3	-52.6	0.	-0.	47.8	578.3	64.7	9.0	1.000011	
80000.0	29.6	-52.1	0.	-0.	46.6	579.0	63.3	9.0	1.000010	
80500.0	28.9	-51.6	0.	-0.	45.4	579.6	65.1	8.9	1.000010	
81000.0	28.2	-51.1	0.	-0.	44.3	580.2	66.9	8.8	1.000010	
81500.0	27.6	-50.6	0.	-0.	43.2	580.9	68.8	8.8	1.000010	
82000.0	26.9	-50.1	0.	-0.	42.1	581.5	71.0	9.0	1.000009	
82500.0	26.3	-49.5	0.	-0.	41.0	582.1	73.2	9.2	1.000009	
83000.0	25.7	-49.1	0.	-0.	40.0	582.8	74.4	9.4	1.000009	
83500.0	25.1	-48.7	0.	-0.	39.0	583.4	73.7	9.5	1.000009	
84000.0	24.5	-48.2	0.	-0.	38.0	584.1	73.0	9.6	1.000008	
84500.0	24.0	-47.7	0.	-0.	37.0	584.7	75.0	9.2	1.000008	
85000.0	23.4	-47.5	0.	-0.	36.2	584.9	80.8	9.7	1.000008	
85500.0	22.9	-47.4	0.	-0.	35.4	585.1	86.5	9.7	1.000008	
86000.0	22.4	-47.2	0.	-0.	34.5	585.3	91.8	9.6	1.000008	
86500.0	21.9	-47.0	0.	-0.	33.7	585.5	96.4	9.4	1.000008	
87000.0	21.4	-46.9	0.	-0.	33.0	585.7	100.9	9.2	1.000007	
87500.0	20.9	-46.7	0.	-0.	32.2	586.0	105.6	9.0	1.000007	
88000.0	20.5	-46.5	0.	-0.	31.5	586.2	110.6	8.8	1.000007	
88500.0	20.0	-46.4	0.	-0.	30.7	586.4	115.5	8.6	1.000007	
89000.0	19.6	-46.2	0.	-0.	30.0	586.6	118.6	8.3	1.000007	
89500.0	19.1	-46.0	0.	-0.	29.3	586.8	113.7	7.2	1.000007	
90000.0	18.7	-45.9	0.	-0.	28.6	587.0	108.9	6.1	1.000006	
90500.0	18.3	-45.7	0.	-0.	28.0	587.2	104.1	5.0	1.000006	
91000.0	17.9	-45.5	0.	-0.	27.3	587.5	106.3	4.9	1.000006	
91500.0	17.5	-45.4	0.	-0.	26.7	587.7	111.8	5.3	1.000006	
92000.0	17.1	-45.2	0.	-0.	26.1	587.9	117.3	5.7	1.000006	
92500.0	16.7	-45.0	0.	-0.	25.5	588.1	122.3	6.0	1.000006	
93000.0	16.3	-44.9	0.	-0.	24.9	588.3	120.9	5.5	1.000006	

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 1030 HRS MDT
ASCENSION NO. 766

UPPER AIR DATA
L 360003901
WHITE SANDS SITE
TABLE VII (Cont)

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPONT DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TH.)	SPEED KNOTS	INDEX OF REFRACTION
93500.0	16.0	-44.7	0*	-0*	24.3	588.5	119.5	1.000005
94000.0	15.6	-44.5	0*	-0*	23.8	588.8	118.0	1.000005
94500.0	15.2	-44.4	0*	-0*	23.2	589.0	119.1	1.000005
95000.0	14.9	-44.2	0*	-0*	22.7	589.2	122.9	1.000005
95500.0	14.6	-44.0	0*	-0*	22.2	589.4	126.7	1.000005
96000.0	14.2	-43.9	0*	-0*	21.6	589.6	130.5	1.000005
96500.0	13.9	-43.7	0*	-0*	21.1	589.8	129.5	1.000005
97000.0	13.6	-43.5	0*	-0*	20.7	590.0	127.8	1.000005
97500.0	13.3	-43.4	0*	-0*	20.2	590.2	126.1	1.000004
98000.0	13.0	-43.2	0*	-0*	19.7	590.3	124.1	1.000004
98500.0	12.7	-43.0	0*	-0*	19.3	590.7	121.1	1.000004
99000.0	12.4	-42.9	0*	-0*	18.8	590.9	118.1	1.000004
99500.0	12.2	-42.7	0*	-0*	18.4	591.1	115.2	1.000004
100000.0	11.9	-42.4	0*	-0*	18.0	591.5	114.4	1.000004
100500.0	11.6	-41.9	0*	-0*	17.5	592.1	114.8	1.000004
101000.0	11.4	-41.4	0*	-0*	17.1	592.8	115.2	1.000004
101500.0	11.1	-40.9	0*	-0*	16.7	593.4	115.6	1.000004
102000.0	10.9	-40.4	0*	-0*	16.3	594.1	111.5	1.000004
102500.0	10.6	-39.9	0*	-0*	15.9	594.7	107.4	1.000004
103000.0	10.4	-39.4	0*	-0*	15.5	595.4	103.3	1.000003
103500.0	10.2	-38.8	0*	-0*	15.2	596.0	104.7	1.000003
104000.0	10.0	-38.3	0*	-0*	14.8	596.7	106.4	1.000003
104500.0	9.8	-37.8	0*	-0*	14.4	597.3	108.3	1.000003
105000.0	9.5	-37.3	0*	-0*	14.1	597.9	109.3	1.000003
105500.0	9.3	-36.8	0*	-0*	13.8	598.6	110.8	1.000003
106000.0	9.1	-36.3	0*	-0*	13.4	599.2	112.4	1.000003

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 1030 HRS MDT
ASCENSION NO. 766

MANDATORY LEVELS
0360003901
WHITL SANDS SITE
TAB.E.VIII

WSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

PRESSURE MILLIBARS	GEOPOTENTIAL FEET	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT	WIND DATA	
					DIRECTION DEGREES(TN)	SPEED KNOTS
850.0	5137.	20.0	9.2	50.	272.0	2.8
800.0	6842.	16.8	5.6	47.	13.5	5.7
750.0	8641.	14.6	0.1	37.	36.9	11.7
700.0	10542.	10.7	-4.4	34.	57.7	15.9
650.0	12550.	5.5	-8.0	37.	55.6	14.6
600.0	14683.	2.9	-16.0	24.	49.1	9.5
550.0	16982.	-0.5	-24.8	14.	59.2	7.2
500.0	19458.	-5.4	-30.1	12.	23.9	7.1
450.0	22153.	-9.2	-35.0	10.	325.7	9.6
400.0	25105.	-15.7	-39.1	1.1.	320.7	8.5
350.0	28356.	-24.0	-42.5	17.	279.7	16.6
300.0	31984.	-31.2	-49.2	15.	279.0	21.7
250.0	36151.	-39.9	-59.8	10.**	281.6	26.4
200.0	41032.	-51.2	-74.1	5.**	268.6	27.9
175.0	43838.	-57.9	-85.9	2.**	266.7	25.1
150.0	46971.	-65.0	0.	-0.**	272.5	24.6
125.0	50550.	-72.4	0.	-0.**	290.8	18.9
100.0	54830.	-72.2	0.	-0.**	176.1	14.8
80.0	59193.	-65.3	0.	-0.**	109.6	13.1
70.0	61867.	-65.8	0.	-0.**	97.5	14.3
60.0	64952.	-63.1	0.	-0.**	92.5	9.8
50.0	68673.	-58.4	0.	-0.**	88.7	14.2
40.0	73313.	-56.1	0.	-0.**	96.4	9.6
30.0	79348.	-52.4	0.	-0.**	64.0	9.0
25.0	83249.	-48.6	0.	-0.**	73.6	9.5
20.0	88094.	-46.4	0.	-0.**	115.1	8.6
15.0	94393.	-44.2	0.	-0.**	121.5	5.7
10.0	103396.	-38.4	0.	-0.**		

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 0700 HRS MDT
ASCENSION NO. 765

SIGNIFICANT LEVEL DATA
O 312003906
WHITE SANDS SITE
TABLE IX

HSTM SITE COORDINATES
E 488,580 FEET
N 185,045 FEET

PRESSURE MILLIBARS	GEOMETRIC ALTITUDE MSL FEET	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT DEGREES CENTIGRADE	REL.HUM. PERCENT
883.4	3989.0	16.5	15.1	91.0
873.0	4323.0	19.5	14.2	71.0
787.0	7238.2	15.1	9.5	69.0
774.0	7701.1	13.3	8.4	72.0
724.0	9542.0	10.6	5.8	72.0
690.0	10850.8	5.9	5.8	99.0
686.0	11007.5	5.4	5.4	100.0
666.0	11804.1	5.4	1.5	76.0
651.0	12414.7	3.4	-2.1	67.0
607.0	14268.7	-0.8	-3.7	81.0
582.0	15373.7	-0.8	-13.4	38.0
577.0	15600.7	0.4	-18.9	22.0
550.0	16859.3	-1.5	-22.8	18.0
541.0	17290.2	-2.8	-17.6	31.0
512.0	18719.7	-5.0	-27.0	16.0
485.0	20112.6	-7.6	-27.3	19.0
477.0	20538.7	-7.0	-29.4	15.0
334.0	29340.6	-26.6	-42.0	22.0
315.0	30722.1	-30.4	-41.0	35.0
296.0	32174.2	-31.8	-47.4	20.0
284.0	33132.6	-34.2	-49.9	19.0
208.0	40070.5	-50.1	0.0	**
154.0	46319.8	-65.3	0.0	**
130.0	49658.5	-72.8	0.0	**
114.0	52190.5	-74.3	0.0	**
193.0	56110.7	-73.4	0.0	**
44.0	71075.9	-59.8	0.0	**
38.0	74140.0	-55.3	0.0	**
20.0	79823.5	-56.6	0.0	**
23.0	84761.0	-49.9	0.0	**

RELATIVE HUMIDITY NOT SUPPLIED.

ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3980 FEET MSL
21 SEPT. 67. 0700 hrs MDT
ASCENSION NO. 765

SIGNIFICANT LEVEL DATA
0312003906
WHAT: SANDS SITE
TABLE IX (Cont)

WSTM SITE COORDINATES
E 400, 900 FEET
N 105, 045 FEET

PRESSURE GEOMETRIC MILLIBARS MSL FEET	TEMPERATURE DEGREES CENTIGRADE	AIR DEWPOINT DEGREES CENTIGRADE	REL. HUM. PERCENT
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9.6 103977.6	-42.5	0.	-0. **
8.8 105936.2	-40.1	0.	-0. **

** RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3999.0 FEET MSL
 21 SEPT. 67 0700 HRS MDT
 ASCENSION NO. 765

UPPER AIR DATA
 031200Z 906
 WHITE SANDS SITE
 TABLE X

WSTM SITE COORDINATES
 E 486.500 FEET
 N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPPOINT DEGREES CENTIGRADE			REL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(1)	SPEED KNOTS	INDEX OF REFRACTION
		DEGREES	CENTIGRADE	DEGREES						
3989.0	882.4	16.5	15.1	91.0	91.0	1054.9	665.1	0*	0.1	1.000312
4000.0	883.1	16.6	15.1	90.3	1054.1	665.2	0.5	0.5	1.000312	
4500.0	867.5	19.2	13.9	70.9	1026.7	668.1	21.4	3.0	1.000299	
5000.0	852.2	18.5	13.1	70.5	1011.4	667.2	42.3	5.9	1.000292	
5500.0	837.2	17.7	12.3	70.2	996.4	666.2	63.3	8.9	1.000286	
6000.0	822.4	17.0	11.5	69.8	981.6	665.3	84.2	11.0	1.000280	
6500.0	807.9	16.2	10.7	69.5	967.0	664.4	92.2	13.3	1.000274	
7000.0	793.7	15.5	9.9	69.2	952.6	663.4	87.9	13.4	1.000268	
7500.0	779.6	14.1	8.9	70.7	940.5	661.7	83.9	13.0	1.000262	
8000.0	765.7	12.9	8.0	72.0	927.8	660.3	80.2	12.3	1.000256	
8500.0	751.9	12.1	7.3	72.0	913.6	659.4	79.6	12.9	1.000251	
9000.0	738.4	11.4	6.6	72.0	899.6	658.5	79.9	13.6	1.000246	
9500.0	725.1	10.7	5.9	72.0	885.9	657.6	82.9	14.8	1.000241	
10000.0	711.9	9.0	6.0	81.4	874.9	655.6	85.6	15.8	1.000239	
10500.0	699.0	7.2	6.0	91.8	864.4	653.6	87.3	16.3	1.000237	
11000.0	686.2	6.4	5.5	100.0	854.0	651.5	88.5	16.4	1.000234	
11500.0	673.6	5.4	3.1	85.2	838.9	651.3	89.0	16.0	1.000224	
12000.0	661.2	4.8	0.4	73.1	825.9	650.3	89.6	14.7	1.000215	
12500.0	648.9	3.2	-2.2	67.6	815.6	648.3	90.2	12.6	1.000208	
13000.0	636.8	2.1	-2.6	71.4	803.7	646.9	90.0	10.3	1.000204	
13500.0	624.9	0.9	-3.0	75.2	792.0	645.6	89.1	7.9	1.000201	
14000.0	613.2	-0.2	-3.4	79.0	780.4	644.3	86.0	5.1	1.000198	
14500.0	601.7	-0.8	-5.2	72.0	767.7	643.4	81.6	2.2	1.000192	
15000.0	590.3	-0.8	-9.3	52.5	757.8	643.2	73.6	1.7	1.000183	
15500.0	579.2	-0.1	-16.0	29.1	738.3	643.7	45.7	1.0	1.000173	
16000.0	568.3	-0.2	-20.1	20.7	724.8	643.6	353.1	2.7	1.000168	
16500.0	557.6	-1.0	-21.7	19.1	713.2	642.6	347.7	4.3	1.000164	
17000.0	547.0	-1.9	-20.8	22.2	702.2	641.5	353.7	6.1	1.000162	
17500.0	536.6	-3.1	-18.8	28.8	691.8	640.2	356.9	8.0	1.000161	
18000.0	526.4	-3.9	-21.8	23.6	680.6	639.2	359.9	9.6	1.000157	

STATION ALTITUDE 3989.0 FEET MSL
 21 SEPT. 67 0700 HRS MDT
 ASCENSION NO. 765

UPPER AIR DATA
 031200Z 3906
 WHITE SANDS SITE
 TABLE X (Cont.)

WSTM SITE COORDINATES
 E 488.580 FEET
 N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES(TN)	SPEED KNOTS	INDEX OF REFRACTION
18500.0	516.4	-4.7	-25.3	18.3	669.7	638.2	2.7	1.000153
19000.0	506.4	-5.5	-27.1	16.6	659.0	637.2	3.3	1.000150
19500.0	496.7	-6.5	-27.1	17.7	648.6	636.0	3.3	1.000148
20000.0	487.1	-7.4	-27.3	18.8	638.3	634.9	3.3	1.000146
20500.0	477.7	-7.1	-29.1	15.4	625.2	635.3	342.2	1.000342
21000.0	468.2	-8.0	-29.9	15.4	615.0	634.1	330.7	1.000140
21500.0	458.8	-9.1	-30.6	15.8	605.2	632.8	322.6	1.000137
22000.0	449.6	-10.3	-31.3	16.2	595.6	631.5	315.8	1.000135
22500.0	440.6	-11.4	-31.9	16.6	586.2	630.1	311.7	1.000133
23000.0	431.8	-12.5	-32.6	17.0	576.9	628.8	312.1	1.000131
23500.0	423.1	-13.6	-33.3	17.4	567.8	627.4	317.4	1.000129
24000.0	414.6	-14.7	-34.0	17.8	558.8	626.1	321.9	1.000126
24500.0	406.3	-15.8	-34.7	18.2	550.0	624.7	326.0	1.000124
25000.0	398.2	-16.9	-35.4	18.5	541.3	623.4	327.6	1.000122
25500.0	390.2	-18.0	-36.2	18.9	532.8	622.0	327.2	1.000120
26000.0	382.4	-19.2	-36.9	19.3	524.4	620.6	321.6	1.000118
26500.0	374.7	-20.3	-37.7	19.7	516.2	619.3	314.4	1.000116
27000.0	367.2	-21.4	-38.4	20.1	508.1	617.9	306.2	1.000114
27500.0	359.8	-22.5	-39.2	20.5	500.1	616.9	296.8	1.000113
28000.0	352.6	-23.6	-39.9	20.9	492.3	615.2	287.6	1.000111
28500.0	345.6	-24.7	-40.7	21.3	484.6	613.8	279.7	1.000109
29000.0	338.6	-25.8	-41.5	21.7	477.0	612.4	273.5	1.000107
29500.0	331.8	-27.0	-41.8	23.5	469.6	610.9	270.6	1.000106
30000.0	324.8	-28.4	-41.3	28.2	462.3	609.2	268.5	1.000104
30500.0	318.0	-29.8	-41.1	32.9	455.2	607.5	267.1	1.000102
31000.0	311.3	-30.7	-42.1	32.1	447.2	606.4	268.1	1.000101
31500.0	304.7	-31.2	-44.1	27.0	438.6	605.6	270.7	1.000098
32000.0	298.2	-31.6	-46.5	21.8	430.2	605.2	272.9	1.000096
32500.0	291.9	-32.6	-48.3	19.7	422.7	603.9	274.9	1.000095
33000.0	285.6	-33.9	-49.6	19.1	415.9	602.3	276.8	1.000093

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 0700 HRS MDT
ASCENSION NO. 765

UPPER AIR DATA
0312003906
WHITE SANDS SIFT
TABLE X (Cont)

WEST SITE COORDINATES
E 486° 580 FEET
N 185° 045 FEET

GEOMETRIC ALTITUDE MSE FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEWPPOINT DEGREES CFNTIGRADE	RFL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF WIND DATA KNOTS	DIRECTION DEGREES(CTN)	INDEX OF REFRACTION
33500.0	279.4	-35.0	-51.1	18.0**	408.7	600.9	278.8
34000.0	273.2	-36.2	-52.7	16.6**	401.6	599.4	279.3
34500.0	267.1	-37.3	-54.4	15.3**	394.6	598.0	279.0
35000.0	261.2	-38.5	-56.1	13.9**	387.7	596.5	278.0
35500.0	255.4	-39.6	-57.9	12.5**	381.0	595.0	276.7
36000.0	249.7	-40.8	-59.8	11.1**	374.4	593.6	275.7
36500.0	244.2	-41.9	-61.7	9.8**	367.9	592.1	275.0
37000.0	238.7	-43.1	-63.8	8.4**	361.5	590.6	272.6
37500.0	233.4	-44.2	-66.0	7.0**	355.3	589.2	267.0
38000.0	228.3	-45.4	-68.4	5.7**	349.1	587.7	266.2
38500.0	223.2	-46.5	-71.2	4.3**	343.1	586.2	264.7
39000.0	218.2	-47.6	-74.6	2.9**	337.2	584.7	269.2
39500.0	213.4	-48.8	-79.4	1.6**	331.4	583.2	261.1
40000.0	208.7	-49.9	-92.0	0.2**	325.7	581.7	259.1
40500.0	203.7	-51.1	0.	-0.**	319.8	580.2	257.2
41000.0	198.9	-52.4	0.	-0.**	313.9	578.6	255.3
41500.0	194.2	-53.6	0.	-0.**	308.1	577.0	254.1
42000.0	189.6	-54.8	0.	-0.**	302.5	575.4	252.9
42500.0	185.1	-56.0	0.	-0.**	296.9	573.8	251.7
43000.0	180.7	-57.2	0.	-0.**	291.4	572.2	250.5
43500.0	176.4	-58.4	0.	-0.**	286.2	570.6	251.1
44000.0	172.2	-59.7	0.	-0.**	281.0	568.9	252.0
44500.0	168.1	-60.9	0.	-0.**	275.9	567.3	252.1
45000.0	164.1	-62.1	0.	-0.**	270.9	565.7	251.8
45500.0	160.7	-63.3	0.	-0.**	266.0	564.1	252.7
46000.0	156.4	-64.5	0.	-0.**	261.2	562.4	253.1
46500.0	152.6	-65.7	0.	-0.**	256.3	560.8	257.5
47000.0	148.8	-66.8	0.	-0.**	251.2	559.3	260.8
47500.0	145.0	-68.0	0.	-0.**	246.3	557.8	263.4
48000.0	141.4	-69.1	0.	-0.**	241.4	556.2	267.0

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 0700 HRS MDT
ASCENSION NO. 745

UPPER AIR DATA
031200Z 3906
WHITE SANDS STIF
TAB J.E X (Cont)

WSTM SITE COORDINATES
E 400.580 FEET
N 185.045 FEET

GEOMETRIC ALTITUDE MSL FEET	PRESSURE MILLIBARS	TEMPERATURE AIR DEGREES CFNTIGRADE	DEWPOINT DEGREES CFNTIGRADE	REFL. HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DATA DIRECTION DEGREES(TN) KNOTS	INDEX OF REFRACTON
48500.0	137.9	-70.2	0.	-0.	236.7	554.7	270.7	29.1
49000.0	134.4	-71.3	0.	-0.	232.0	553.2	272.9	29.6
49500.0	131.0	-72.4	0.	-0.	227.5	551.6	274.2	30.1
50000.0	127.7	-73.0	0.	-0.	222.3	550.9	275.1	30.6
50500.0	124.4	-73.3	0.	-0.	217.0	550.5	275.4	27.6
51000.0	121.3	-73.6	0.	-0.	211.7	550.1	275.3	25.5
51500.0	118.2	-73.9	0.	-0.	205.6	549.6	273.6	22.9
52000.0	115.1	-74.2	0.	-0.	201.6	549.2	271.9	20.2
52500.0	112.2	-74.2	0.	-0.	196.5	549.2	267.9	18.2
53000.0	109.3	-74.1	0.	-0.	191.3	549.3	263.9	16.2
53500.0	106.5	-74.0	0.	-0.	186.3	549.3	262.6	15.3
54000.0	103.8	-73.9	0.	-0.	181.4	549.7	262.3	14.9
54500.0	101.1	-73.8	0.	-0.	176.7	549.8	261.4	13.2
55000.0	98.5	-73.7	0.	-0.	172.1	550.0	258.5	9.6
55500.0	96.0	-73.5	0.	-0.	167.6	550.1	248.7	6.8
56000.0	93.5	-73.4	0.	-0.	163.2	550.3	183.9	4.7
56500.0	91.2	-73.0	0.	-0.	158.8	550.8	119.0	3.2
57000.0	89.0	-72.6	0.	-0.	154.5	551.5	102.7	5.3
57500.0	66.8	-72.1	0.	-0.	150.3	552.1	99.7	8.2
58000.0	14.6	-71.6	0.	-0.	146.3	552.8	91.8	10.0
58500.0	82.5	-71.1	0.	-0.	142.3	553.5	79.1	10.6
59000.0	80.5	-70.6	0.	-0.	138.5	554.1	69.9	11.6
59500.0	78.5	-70.2	0.	-0.	134.7	554.6	66.7	13.3
60000.0	76.6	-69.7	0.	-0.	131.1	555.4	64.7	15.0
60500.0	74.7	-69.2	0.	-0.	127.6	556.1	65.2	16.7
61000.0	72.8	-68.7	0.	-0.	124.1	556.7	67.0	18.2
61500.0	71.0	-68.3	0.	-0.	120.8	557.4	73.3	19.3
62000.0	69.3	-67.8	0.	-0.	117.5	558.0	79.7	20.4
62500.0	67.6	-67.3	0.	-0.	114.4	558.7	81.7	19.5
63000.0	65.9	-66.8	0.	-0.	111.3	559.3	83.6	19.8

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3089.0 FEET MSL
 21 SEPT. 67 0700 HRS MDT
 ASCENSION NO. 745

UPPER AIR DATA
 631200Z 3906
 WHITE SANDS SITE
 TABLE X (Cont.)

WSYM SITE COORDINATES
 E 400, 300 FEET
 N 105, 045 FEET

GEOMETRIC ALTITUDE MSL (FEET)	PRESSURE MICRIBARS	TEMPERATURE AIR DEGREES CENTIGRADE	RFL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	WIND DIRECTION DEGREES (TN)	WIND SPEED KNOTS	INDEX OF REFRACTION
63500.0	64.3	-66.3	**	108.3	560.0	86.0	17.7	1.000024
64000.0	62.7	-65.9	0.	105.4	560.6	88.7	17.4	1.000023
64500.0	61.1	-65.4	0.	102.5	561.3	91.5	16.3	1.000023
65000.0	59.6	-64.9	0.	99.8	561.9	93.3	14.3	1.000022
65500.0	58.2	-64.4	0.	97.1	562.5	95.2	12.1	1.000022
66000.0	56.7	-64.0	0.	94.5	563.2	97.1	11.2	1.000021
66500.0	55.3	-63.5	0.	91.9	563.8	99.0	11.6	1.000020
67000.0	53.9	-63.0	0.	89.4	564.5	101.0	11.9	1.000020
67500.0	52.6	-62.5	0.	87.0	565.1	98.0	10.7	1.000019
68000.0	51.3	-62.0	0.	84.7	565.8	91.1	9.5	1.000019
68500.0	50.0	-61.6	0.	82.4	566.4	96.5	8.9	1.000018
69000.0	48.7	-61.1	0.	80.2	567.0	102.5	9.4	1.000018
69500.0	47.6	-60.6	0.	78.0	567.7	78.5	9.3	1.000017
70000.0	46.4	-60.1	0.	75.9	568.3	72.1	9.9	1.000017
70500.0	45.3	-59.6	0.	73.9	568.9	64.0	9.8	1.000016
71000.0	44.2	-59.1	0.	71.9	569.6	58.1	9.7	1.000016
71500.0	43.1	-58.6	0.	70.0	570.4	60.5	10.0	1.000016
72000.0	42.1	-58.1	0.	68.2	571.2	62.8	10.4	1.000015
72500.0	41.1	-57.6	0.	66.4	572.0	65.0	10.8	1.000015
73000.0	40.1	-56.7	0.	64.6	572.8	66.7	11.2	1.000014
73500.0	39.2	-56.1	0.	62.9	573.7	69.3	11.6	1.000014
74000.0	38.3	-55.5	0.	61.2	574.5	69.6	11.3	1.000014
74500.0	37.4	-55.4	0.	59.8	574.6	70.4	10.5	1.000013
75000.0	36.5	-55.5	0.	58.4	574.5	71.2	9.6	1.000013
75500.0	35.6	-55.6	0.	57.0	574.3	72.1	9.6	1.000013
76000.0	34.8	-55.7	0.	55.7	574.2	73.0	10.0	1.000012
76500.0	34.0	-55.8	0.	54.5	574.0	74.0	10.4	1.000012
77000.0	33.2	-56.0	0.	53.2	573.8	76.7	10.4	1.000012
77500.0	32.4	-56.1	0.	52.0	573.7	80.4	10.0	1.000012
78000.0	31.6	-56.2	0.	50.8	573.5	84.1	9.7	1.000011

** AT 1 FAST ONE ASSUMED RFL.HUM. HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
21 SEPT. 67 0700 HRS MDT
ASCENSION NO. 765

UPPER AIR DATA
7312003906
WHITE SANDS SITE
TALES X (Cont.)

GEOMETRIC ALTITUDE MSE, FEET	PRESSURE MILLIBARS	TEMPERATURE DEGREES CENTIGRADE	AIR DEPOINT CENTIGRADE	REL.HUM. PERCENT	DENSITY GM/CUBIC METER	SPEED OF SOUND KNOTS	DIRECTION DEGREES(TIN)	WIND SPEED KILOTS	INDEX OF REFRACTION
78500.0	30.9	-56.3	0.	-0.	49.6	573.4	86.1	9.1	1.000011
79000.0	30.2	-56.4	0.	-0.	48.5	573.2	87.5	8.5	1.000011
79500.0	29.4	-56.5	0.	-0.	47.4	573.1	88.9	7.8	1.000011
80000.0	28.8	-56.4	0.	-0.	46.2	573.3	92.9	6.7	1.000010
80500.0	28.1	-55.7	0.	-0.	45.0	574.2	97.9	5.4	1.000010
81000.0	27.4	-55.0	0.	-0.	43.8	575.1	103.0	4.1	1.000010
81500.0	26.8	-54.3	0.	-0.	42.7	576.0	102.2	3.6	1.000009
82000.0	26.2	-53.6	0.	-0.	41.6	576.9	98.9	3.3	1.000009
82500.0	25.6	-53.0	0.	-0.	40.5	577.8	95.7	3.0	1.000009
83000.0	25.0	-52.3	0.	-0.	39.4	578.7	92.7	3.6	1.000009
83500.0	24.4	-51.6	0.	-0.	38.4	579.6	89.8	4.6	1.000009
84000.0	23.8	-50.9	0.	-0.	37.4	580.4	86.9	5.6	1.000009
84500.0	23.3	-50.3	0.	-0.	36.4	581.3	79.6	5.7	1.000009
85000.0	22.8	-49.8	0.	-0.	35.5	581.9	70.1	5.4	1.000009
85500.0	22.2	-49.6	0.	-0.	34.7	582.2	60.7	5.1	1.000009
86000.0	21.7	-49.4	0.	-0.	33.9	582.4	54.8	4.9	1.000008
86500.0	21.3	-49.2	0.	-0.	33.1	582.7	50.6	4.7	1.000007
87000.0	20.8	-49.0	0.	-0.	32.3	582.9	46.5	4.6	1.000007
87500.0	20.3	-48.8	0.	-0.	31.5	583.2	36.8	4.1	1.000007
88000.0	19.9	-48.7	0.	-0.	30.8	583.4	23.5	3.5	1.000007
88500.0	19.4	-48.5	0.	-0.	30.1	583.7	10.3	2.8	1.000007
89000.0	19.0	-48.3	0.	-0.	29.4	583.9	20.1	2.6	1.000007
89500.0	18.5	-48.1	0.	-0.	28.7	584.2	47.0	2.7	1.000006
90000.0	18.1	-47.9	0.	-0.	28.0	584.4	74.0	2.8	1.000006
90500.0	17.7	-47.7	0.	-0.	27.4	584.7	86.6	2.4	1.000006
91000.0	17.3	-47.5	0.	-0.	26.7	584.9	86.6	1.7	1.000006
91500.0	16.9	-47.3	0.	-0.	26.1	585.2	86.6	0.9	1.000006
92000.0	16.5	-47.1	0.	-0.	25.5	585.4	89.9	1.1	1.000004
92500.0	16.2	-46.9	0.	-0.	24.9	585.7	96.5	2.1	1.000006
93000.0	15.8	-46.7	0.	-0.	24.3	585.9	103.1	3.1	1.000005

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL
 21 SEPT. 67 0700 HRS MDT
 ASCENSITN NO. 71

UPPIR AIR DATA
 0312003906
 WHITE SANDS SITE
 TABLE X (Cont.)

WEST SITE COORDINATES
 E 488.580 FEET
 N 185.045 FEET

GEOMETRY	PRESURF	TEMPERATURE	REL.HUM.	DENSITY	SPEED OF	WIND DATA	INDEX
ALTITUDE	MILLIBARS	AIR DEWPPOINT	PERCENT	GM/CUBIC METER	SOUND DEGREES(TN)	DIRECTION SPEED KNOTS	OF REFRACTION
HGT. FEET	DEGREES	CENTIGRADE					
93500.0	15.5	-46.5	-0*	23.8	586.2	102.9	3.4
94000.0	15.1	-46.3	-0*	23.2	586.4	94.3	2.8
94500.0	14.8	-46.1	-0*	22.7	586.7	85.8	2.2
95000.0	14.4	-46.0	-0*	22.1	586.9	82.2	3.1
95500.0	14.1	-45.9	-0*	21.6	587.2	85.8	6.3
96000.0	13.8	-45.6	-0*	21.1	587.4	89.4	9.5
96500.0	13.5	-45.4	-0*	20.6	587.7	88.3	11.2
97000.0	13.2	-45.2	-0*	20.2	587.9	79.5	20.4
97500.0	12.9	-45.0	-0*	19.7	588.1	70.6	9.6
98000.0	12.6	-44.8	-0*	19.2	588.4	64.2	9.3
98500.0	12.3	-44.6	-0*	18.8	588.6	62.9	10.2
99000.0	12.0	-44.4	-0*	18.3	588.9	61.6	11.0
99500.0	11.8	-44.2	-0*	17.9	589.1	57.5	11.3
100000.0	11.5	-44.0	-0*	17.5	589.4	46.4	10.0
100500.0	11.2	-43.8	-0*	17.1	589.6	35.4	8.7
101000.0	11.0	-43.6	-0*	16.7	589.9	32.1	8.1
101500.0	10.7	-43.5	-0*	16.3	590.1	52.2	9.5
102000.0	10.5	-43.3	-0*	15.9	590.4	72.3	10.9
102500.0	10.3	-43.1	-0*	15.5	590.6	1.000003	1.000003
103000.0	10.0	-42.9	-0*	15.2	590.9	1.000003	1.000003
103500.0	9.8	-42.7	-0*	14.8	591.1	1.000003	1.000003
104000.0	9.6	-42.5	-0*	14.5	591.4	1.000003	1.000003
104500.0	9.4	-41.9	0*	14.1	592.2	1.000003	1.000003
105000.0	9.2	-41.7	0*	13.8	593.0	1.000003	1.000003
105500.0	9.0	-40.6	0*	13.4	593.7	1.000003	1.000003

** AT & FAST ON IF ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

STATION ATTITUDE 2000 FEET MSL
21 SEPT. 67 0700 HRS MDT
ASCENSION NO. 765

MANDATORY LEVELS
- 312003906
WHITE SANDS SITE
TAB.E XI.

WSTM SITE COORDINATES
F 488.580 FEET
N 185.045 FEET

MILLIBARS	PRESSURE GRADIENT	TEMPERATURE	AIR DEPOINT	PERCENT	WIND DATA	
					DIRECTION DEGREES(1N)	SPEED KNOTS
450.0	5077.0	18.4	13.0	70.	45.6	6.4
800.0	6778.0	15.8	10.3	69.	89.8	13.4
750.0	8567.0	12.0	7.2	72.	79.6	12.9
700.0	10455.0	7.3	6.0	91.	87.1	16.3
650.0	12446.0	3.3	-2.2	67.	90.2	12.8
600.0	14561.0	-0.8	-5.8	69.	80.5	2.1
550.0	16843.0	-1.5	-22.8	18.	352.2	5.5
500.0	19310.0	-6.1	-27.1	17.	1.0	11.3
450.0	21997.0	-10.2	-31.2	16.	315.6	12.2
420.0	24937.0	-16.7	-35.3	18.	327.7	13.9
350.0	28182.0	-24.0	-40.2	21.	284.1	18.6
300.0	31810.0	-31.5	-45.8	23.	272.3	27.8
250.0	35965.0	-40.7	-59.7	11.**	275.7	25.5
200.0	40827.0	-52.1	0.	-0.**	255.7	28.7
175.0	43621.0	-58.8	0.	-0.**	251.5	29.5
150.0	46738.0	-66.5	0.	-0.**	259.6	28.7
125.0	50291.0	-73.2	0.	-0.**	275.3	28.0
100.0	54563.0	-73.7	0.	-0.**	260.2	11.7
80.0	58866.0	-70.5	0.	-0.**	69.7	11.7
70.0	61483.0	-68.0	0.	-0.**	75.4	19.7
60.0	64544.0	-65.0	0.	-0.**	92.4	15.5
50.0	68221.0	-61.5	0.	-0.**	86.9	8.9
40.0	72808.0	-56.6	0.	-0.**	66.9	11.2
30.0	78814.0	-56.4	0.	-0.**	87.8	8.3
25.0	82639.0	-52.3	0.	-0.**	92.9	3.6
20.0	87425.0	-48.7	0.	-0.**	29.1	3.7
15.0	93663.0	-46.3	0.	-0.**	92.9	2.7
10.0	102570.0	-47.8	0.	-0.**		

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

RELEASE TIME (MDT)	SECOND-STAGE IMPACT DISPLACEMENT IN MILES DUE TO WIND								THEORETICAL IMPACT FROM LAUNCHER (IN MILES)
	11-216 FT		216-4000 FT		4000-74168 FT		TOTAL		
RAWIN- SCONDE	PIBAL	N-S	E-W	N-S	E-W	N-S	E-W	AZI-MUTH (DEG- REES)	
0700	0800	3.6S	0.7W	5.9S	8.7E	3.5S	12.0W	13.0S	4.0W
	0830	3.3S	1.5W	4.5S	1.7E	3.5S	12.0W	11.3S	11.8W
	0900	3.8S	0.4E	0.7S	0.2E	3.5S	12.0W	8.0S	11.4W
	0915	4.9S	0.1E	0.2S	0.3E	3.5S	12.0W	8.6S	11.6W
	0930	4.6S	1.6W	0.1N	0.7W	3.5S	12.0W	8.0S	14.3W
	0940	2.9S	0.4W	0.7S	1.8W	3.5S	12.0W	7.1S	14.2W
	0950	4.0S	0.5E	2.7S	0.4E	3.5S	12.0W	10.2S	11.1W
	1001	2.3S	1.4E	1.3S	0.5W	3.5S	12.0W	7.1S	11.1W
1030	1001	2.3S	1.4E	1.3S	0.5W	0.1N	10.6W	3.5S	9.7W

	AZI-MUTH (DEG- REES)				MILES FROM LAUNCHER
LAUNCHER SETTING (ELEVATION 84.4 DEGREES QE)	013.0	80.0	78.0N	18.0E	
NO WIND IMPACT	009.4	79.3	78.0	13.0	
PREDICTED SECOND-STAGE IMPACT	360.0	69.0	69.0	0.0	
SECOND-STAGE IMPACT, RADAR TRACK	357.0	73.2	73.1	3.8W	
PREDICTED BOOSTER IMPACT	014.0	1.8	1.7	0.4E	
ACTUAL BOOSTER IMPACT	002.1	1.3	1.2	0.2	

TABLE XII. IMPACT PREDICTION DATA
NIKE-HYDAC STV (SR 059)

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R&D

(Security classification of this body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate name)		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED	
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3. REPORT TITLE METEORLOGICAL DATA REPORT, NIKE-HYDAC STV (SR 059)			
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11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY U. S. Army Electronics Command Atmospheric Sciences Laboratory White Sands Missile Range, New Mexico		
13. ABSTRACT			

Meteorological data gathered for the launching of Nike-Hydac STV (SR 059) are presented for the Ballistics Systems Division, U. S. Air Force, and for ballistic studies. The data appear, along with calculated Ballistic data, in tabular form.

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14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
1. Ballistics 2. Meteorology 3. Wind						

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